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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,909	03/02/2004	Gary G. Podrebarac	CDT 1744	1403
1338	7590	04/20/2007		
KENNETH H. JOHNSON P.O. BOX 630708 HOUSTON, TX 77263			EXAMINER DOUGLAS, JOHN CHRISTOPHER	
			ART UNIT	PAPER NUMBER
			1764	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/20/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/790,909	PODREBARAC, GARY G.	
	Examiner	Art Unit	
	John C. Douglas	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6 and 8-11 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/24/2004</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 1, 2, 5, 6, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hearn (US 5597476) in view of Gajda (US 5744686).
  2. With respect to claims 1 and 8, Hearn discloses contacting a cracked naphtha feed containing olefins, diolefins, mercaptans, and thiophenes in a distillation reaction zone under conditions to react a portion of the mercaptans with a portion of the diolefins to produce an overhead with a reduced mercaptan content and a bottoms stream. The bottoms stream is then fed to a second distillation column reactor to undergo hydrodesulfurization where sulfides, thiophenes and mercaptans are reacted with

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hydrogen to form hydrogen sulfide. See Hearn, column 1, lines 30-34 and column 2, lines 30-62.

Hearn does not disclose where the naphtha feed contains nitrogen and does not disclose the nitrogen treating step.

However, Applicant's specification discloses where cracked naphtha contains organic nitrogen (see Specification, page 2).

Also, Gajda discloses a step for removing nitrogen from a feed stream in order to protect a downstream catalyst (see Gajda, column 1, lines 6-11).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Hearn to include a step for removing nitrogen from a feed stream in order to protect a downstream catalyst.

3. With respect to claims 2, 5, 6, and 9-11, Gajda discloses where the nitrogen is selectively removed by a nitrogen adsorbent comprising activated alumina, silica gel, or Fuller's earth (see Gajda, column 1, lines 6-11 and lines 55-65).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hearn in view of Gajda as applied to claim 1 above, and further in view of Podrebarac (US 6303020). Hearn in view of Gajda do not disclose the post hydrosulfurization treatment described in claim 3.

However, Podrebarac discloses feeding the overhead and bottoms from a hydrosulfurization distillation column reactor into a separation zone where hydrogen sulfide is removed and part of the liquid product is further sent to another

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hydrodesulfurization reactor and the resulting hydrogen sulfide is removed (see Podrebarac, column 6, line 35 – column 7, line 55 and Figure 2).

Podrebarac discloses that such an arrangement prevents the formation of recombinant sulfur compounds while preventing the hydrogenation of olefins (see Podrebarac, column 3, lines 44-48).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process Hearn in view of Gajda to include feeding the overhead and bottoms from a hydrodesulfurization distillation column reactor into a separation zone where hydrogen sulfide is removed and part of the liquid product is further sent to another hydrodesulfurization reactor and the resulting hydrogen sulfide is removed because such an arrangement prevents the formation of recombinant sulfur compounds while preventing the hydrogenation of olefins.

#### ***Allowable Subject Matter***

5. Claim 7 is allowed.
6. The following is an examiner's statement of reasons for allowance: the prior art does not teach or disclose a process for reducing nitrogen compounds in a naphtha feed comprising olefins, diolefins, mercaptans, thiophene and organic nitrogen by contacting the feed with a thioetherification catalyst in the presence of hydrogen in a distillation column reactor to produce a light naphtha stream, an intermediate stream, and a heavy naphtha stream where the intermediate stream is removed intermediate two catalyst beds, where the heavy naphtha stream is sent to a nitrogen adsorption

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zone followed by a hydrodesulfurization zone and combined with the light naphtha stream.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or disclose the prior art does not teach or disclose a process for reducing nitrogen compounds in a naphtha feed comprising olefins, diolefins, mercaptans, thiophene and organic nitrogen by contacting the feed with a thioetherification catalyst in the presence of hydrogen in a distillation column reactor to produce a light naphtha stream, an intermediate stream, and a heavy naphtha stream where the intermediate stream is removed intermediate two catalyst beds, which is combined with a liquid product of the heavy naphtha stream that has been sent to a nitrogen adsorption zone and then passed to a hydrodesulfurization reactor.

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***Conclusion***

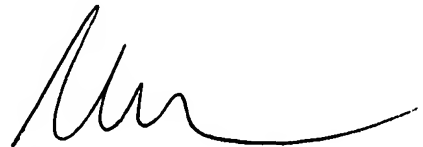
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Douglas whose telephone number is 571-272-1087. The examiner can normally be reached on 7:30 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCD

4/3/2007



Glenn Caldarola  
Supervisory Patent Examiner  
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